

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
31 March 2005 (31.03.2005)

PCT

(10) International Publication Number
WO 2005/028675 A3

(51) International Patent Classification⁷: **C12Q 1/68**,
G01N 33/50, 33/574

(21) International Application Number:
PCT/JP2004/013722

(22) International Filing Date:
14 September 2004 (14.09.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/505,632 24 September 2003 (24.09.2003) US

(71) Applicants (for all designated States except US):
ONCOTHERAPY SCIENCE, INC. [JP/JP]; 3-16-13,
Shirokanedai, Minato-ku, Tokyo 1080071 (JP). **THE UNI-**
VERSITY OF TOKYO [JP/JP]; 3-1, Hongo 7-chome,
Bunkyo-ku, Tokyo 1138654 (JP).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **NAKAMURA,**

Yusuke [JP/JP]; 17-33, Azamino 1-chome, Aoba-ku,
Yokohama-shi, Kanagawa 2250011 (JP). **FURUKAWA,**
Yoichi [JP/JP]; 10-40, Miyazaki 3-chome, Miyamae-ku,
Kawasaki-shi, Kanagawa 2160033 (JP).

(74) Agents: **SHIMIZU, Hatsushi** et al.; Kantetsu Tsukuba
Bldg. 6F, 1-1-1, Oroshi-machi, Tsuchiura-shi, Ibaraki
3000847 (JP).

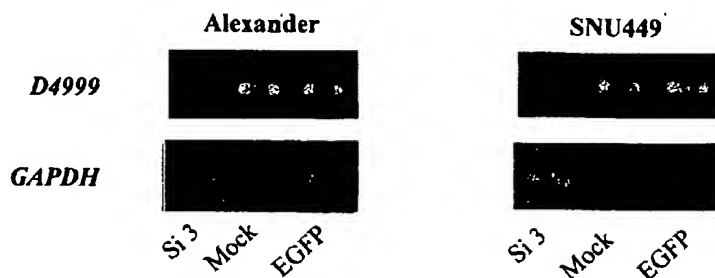
(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,

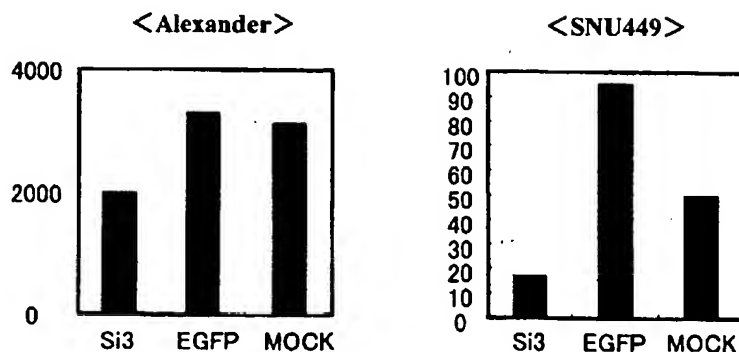
[Continued on next page]

(54) Title: METHODS FOR DETECTING, DIAGNOSING AND TREATING HEPATOCELLULAR CARCINOMAS (HCC)

a



b



(57) Abstract: Objective methods for detecting, diagnosing, treating and preventing hepatocellular carcinoma (HCC) are described herein. In particular, the present invention relates to two genes up-regulated in HCC cells as compared to normal cells, referred to herein as MGC47816 and HES6. In one embodiment, the diagnostic method involves the determining the expression level of MGC47816 or HES6 that discriminate between hepatocellular carcinoma cells and normal cells. The present invention further provides methods of screening for therapeutic agents useful in the treatment of HCC, methods of treating HCC, and methods for vaccinating a subject against HCC.

BEST AVAILABLE COPY

WO 2005/028675 A3



GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

Declarations under Rule 4.17:

— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE,

Published:

— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:

2 June 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.